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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Pieter Lodewikus Swart

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EXAMINER

BOLDA, ERIC L

ART UNIT

PAPER NUMBER

3663

MAIL DATE

DELIVERY MODE

07/29/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/561,508	Applicant(s) SWART ET AL.	
	Examiner ERIC BOLDA	Art Unit 3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 May 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,5 and 7-10 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,5 and 7-10 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2009 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. This Office Action is responsive to Applicant's amendment of May 5, 2009.
2. The objections to amended claim 2, 9, and 10 are withdrawn.

Drawings

3. The drawings (replacement Figs. 1 and 2) were received on May 5, 2009. These drawings are accepted.

Specification

4. The amendments to the Specification overcome the objections made in the previous Office Action.

Response to Arguments

5. Applicant's argument regarding the 112 (2nd para.) rejection of claims 1-10, see Remarks sect. V, have been considered and are persuasive. The rejection is withdrawn.
6. Applicant's argument regarding the prior art rejection of claims 1, 2, 4, 7, and 8 see Remarks Sect. VI have been considered, and are persuasive. The amendment of claims 1, 2, 5, 7, and 8 overcomes the 35 USC 102(b) rejection over Abe et al. However, the added limitations in these claims are made obvious by the Augustsson and Ting references, as they were applied previously to claims 3-4, 6, and 9-10 and as detailed below.
7. Applicant's argument regarding the prior art rejection of claims 3-4, 6, and 9-10, see Remarks Sect. VII have been considered but are not persuasive. Applicant has summarized Ting as merely disclosing a method and apparatus for tuning an optical

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device using heat; in response the Examiner points out that Ting was actually cited for its teaching of a long period grating, now a limitation in amended claim 1. Applicant has summarized Augustsson as merely disclosing a device and method for optical filtering comprising four waveguides, each including a reflection section and an optical attenuator, where the reflection section is a Bragg grating (e. g. (62) in Fig. 2). On the contrary, the Examiner contends the Augustsson reference also teaches as part of the tunable optical filter of Fig. 2: an optical splitter (30) connected to an optical power source, and an adjustable gain amplifier consisting of an optical amplifier (52) and a variable optical attenuator (72). These elements, combined in a combination with the variable optical splitter, optical filter and the optical combiner of Abe, result in the claimed invention. Therefore, the obviousness rejection is made with the combination of the previously cited references. See below for the 35 USC 103(a) rejection of the claims as amended.

Claim Rejections - 35 USC § 103

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. Claims 1-2, 4-5, and 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al. (US 2002,0191274). in view of Augustsson (US 6,4732,540), and further in view of Ting (US 20030039448).

With regard to claim 1, Abe et al discloses in Fig. 6 a variable optical gain equalizer comprising

- A first optical path (upper) and a second optical path (lower)

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- An optical splitter (112) connected to an input fiber. The input fiber is capable of being connected to an optical power source.
- An optical filter (114) provided in the first optical path
- An optical combiner (118) configured to combine at least part of the optical signals from each of the first and second paths into an output channel, fiber (122)

Abe does not disclose that the second optical path includes an adjustable gain amplifier. However, Augustsson teaches (Fig. 2) as part of an apparatus for equalizing an optical spectrum, an optical amplifier (52) in combination with a fiber grating (62) functioning as a filter, on a path (32) separate from the other optical paths (34,36,38). The amplifier also includes a variable optical attenuator section (72), so that a function of variable optical amplification is achieved. 3rd col. lines 7-13. Since the purpose of Augustsson's device is similar to Abe's (i. e. equalizing an optical spectrum), it would have been obvious to one skilled in the art (e. g. an optical engineer) to incorporate the variable optical amplifier (optical amplifier and variable optical attenuator) into at least one of the optical paths in the device of Abe, thereby reducing the losses of desired optical signals (Augustsson, 1st col. lines 31-37). Neither Abe nor Augustsson specifically disclose that the optical filter is a long period grating (LPG) filter; rather, Abe discloses quite generally "various optical fiber grating filters" [0069]. However, Ting teaches a long period grating (54,56) [0001] in an optical fiber, as part of a Mach-Zehnder interferometer. It would have been obvious to one skilled in the art (e. g. an optical engineer) to choose the optical filter of Abe to be a LPG since a similar

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application is suggested in Ting, and the LPG provides the filtering functionality required of Abe.

With regard to claim 2, the optical splitter is tunable (has a variable branching ratio, Abe para. [0069])

With regard to claim 5, the optical combiner is a fixed combiner, and the optical combiner is a 3dB fixed optical coupler in at least one embodiment [(Abe 0071)].

With regard to claim 7, the optical filter acts as a notch filter for at least some broadband optical sources. See the transmittance vs wavelength plot in Abe, Fig. 10A.

With regard to claim 8, the optical paths of the device in Abe form a Mach-Zehnder interferometer.

With regard to claims 9-10, the optical splitter is tunable (has a variable branching ratio, Abe para. [0069]). Further, it is well within the skill of the art at the time of invention that the optical attenuator and amplifier can be set to attenuate or amplify the input signal by at least 10dB. ASE sources are notoriously well-known in the art of optical engineering.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

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TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Eric Boldt whose telephone number is 571-272-8104. The examiner can normally be reached on M-F from 8:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the Examiner's supervisor, Jack Keith, can be reached on 571-272-6878. Please note the fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Eric Boldt/

Primary Examiner, Art Unit 3663

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